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539,531 COMPLETE SPECIFICATION 1 Sh

[This Drawing is a reproduction of the Original on a reduced scale.]

Fig. 1.

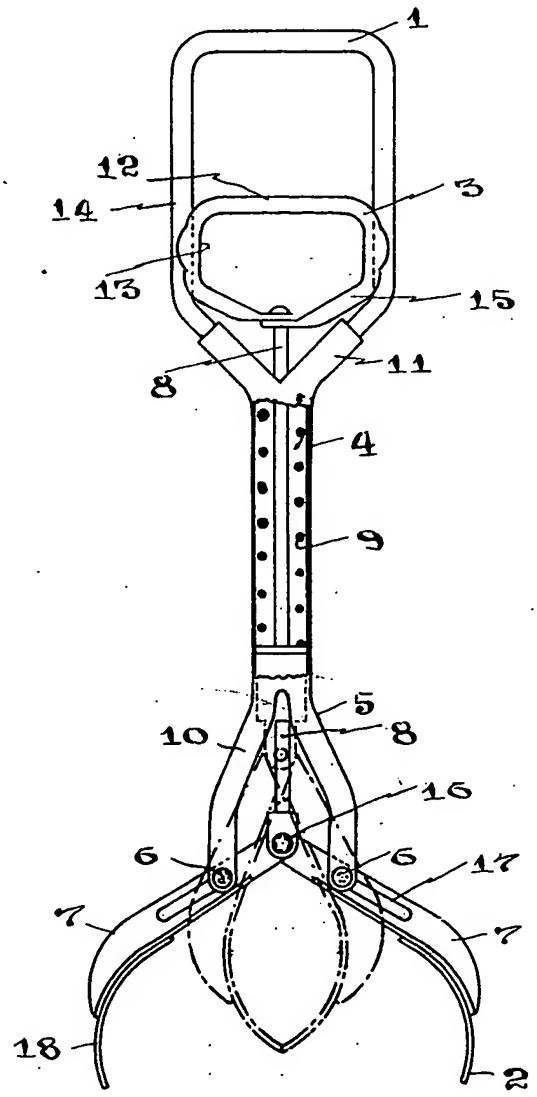
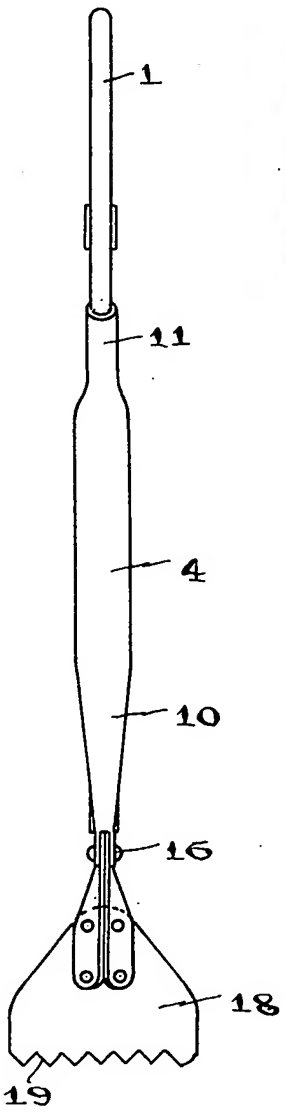


Fig. 2.



Malby & Sons, Photo-Lith.

PATENT SPECIFICATION

Application Date: April 30, 1940. No. 7696/40.

Complete Specification Left: April 29, 1941.

Complete Specification Accepted: Sept. 15, 1941.

539,531

PROVISIONAL SPECIFICATION

Improvements in and Appertaining to Coal Tongs and the like

I, ALFRED ROGER GROSSMITH, a British subject, of 9, Waverley Road, Gloucester, in the County of Gloucester, do hereby declare the nature of this invention to be as follows:—

This invention relates to coal tongs and the like, and comprises certain improvements therein, the said invention having for its object the provision of a gripping appliance or tool by which heavy pieces of coal or other material can be held with small effort; in which the position of the members to which hand pressure is applied, is more convenient than in conventional tongs; which, consequentially, facilitates manipulation and control; which carries the weight in a more natural position for the hand; in which the hand grip is disposed remote from the material gripping members to avoid discomfort when attending to a hot fire; which allows small pieces or large pieces to be picked up and held with equal facility and sureness; and which if desired can be adapted to deal with slack or coal dust.

Having the aforesaid and other objects in view as will appear in the following specification, the invention consists in an appliance or tool for the purposes indicated in which the operating movement of the hand grips, instead of being transverse to the tool, is in the same direction as the longitudinal axis of the tool, the tool being suspended or pendant from the fingers of the hand which take a position more or less horizontal and thereby enable the load to be carried without calling for a supporting pressure; the gripping pressure need only be sufficient to retain the piece in the grab.

According to one convenient embodiment of the invention, the improved tool includes two relatively slidable parts or groups of parts one of which embraces a hand grip, the grab, and a mechanical connection between the grip and the grab; while the other comprises a second hand grip and a mounting or support for the elements of the first mentioned group.

Though the rectilinear motion of the two hand grips is relative, it will be convenient to consider the grip which is mechanically coupled to the grab as the movable one, and the other one as stationary. Structurally, any convenient construction of the mounting may be adopted. In one suitable arrangement, the mounting consists of a tube having at one end the hand grip and at the other a bifurcation adapted to carry two fulcrum pins for the grab members. The intermediate part of the tube constitutes an enclosure and/or guide for the aforesaid mechanical connection between the slidable grip and its grab, and also functions as a housing for accommodating a coiled spring.

The tubular mounting may be fabricated from a length of tube or from a blank of sheet metal processed to the preferred shape or configuration now to be described. At the grab end, the metal is developed into a pair of limbs of **U** cross-section in the terminal ends of which are secured as by rivetting the two fulcrum pins. At the grip end, the metal is shaped into two tubes which diverge like a **Y**, either to receive a wire grip member or be continued as such member. Beyond the fork, the grip member may be of square or rectangular shape with rounded corners.

The movable grip lies in the same plane as the stationary grip, and may consist also of wire bent to shape with a transverse limb forming the grip proper, two side limbs slidably mounted in or on the corresponding limbs of the stationary grip, and two converging limbs attached at the apex to one end of a coupling rod. The other end of the rod emerges from stationary housing for actuating the grab members which preferably though not necessarily are adapted and constructed to function as levers of the first order.

In the preferred grab mechanism, the inner ends of the grab members are mutually and hingedly connected to an eye at the termination of the coupling rod, and the fulcrum connection intermediate the ends of each member is slotted, the slots being inclined to the axis of the coupling rod at an obtuse angle when the grab is open and at an acute angle when the grab is closed. The grab members may each be composed of a pair

of sheet metal parts of L section butted together for hinge connection as aforesaid, and rivetted or otherwise attached to a curved plate toothed at the outer edge.

In use, some or all of the fingers are inserted in the movable grip, and the palm brought to bear on the upper side of the stationary grip, the two parallel grips being spaced apart a convenient distance apart. In this position, the coiled spring mentioned holds the grab members open and the lower grip member against the bottom part of the stationary grip member, and the tool hangs downwardly. By closing the hand, the movable grip and attached rod are drawn towards the other grip in a sliding action which is converted into a closing action of the grab members by the tension in the rod. The latter by virtue of the slotted connection have a combined sliding and turning motion in the same plane as that in which the pure sliding movement of the grip occurs, and are supported laterally by the two limbs of the bifurcation wherein they are mounted. A small movement of the grip say of one inch is sufficient to move the grab from open to closed position, and it is convenient to leave a spacing of a little more than said dimension between the grips when the grab is closed. Release of hand pressure allows the return spring to restore the several parts to their initial positions.

The shape of the grab members may be appropriately modified to retain slack or dust as well as small coal, in which modification the said members may be extended to have the character of an enclosure; they may also be of greater width to augment the capacity.

Or in a further modification, extended grabs with rubber fingers may be incorporated to enable the appliance to be employed for reaching articles in shop windows.

For greater comfort, the movable grip may be fashioned in a sinuous formation to provide recesses adapted to accommodate the fingers.

The free ends of the grab members preably have straight line boundaries at right angles to the axis of the appliance, by which arrangement or formation the tool can be stood upright and rest on said edges, so that when not in use it can alternatively be suspended by a grip or stood on the floor.

Dated this 29th day of April, 1940.

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Patent Agent and Chartered Engineer.

COMPLETE SPECIFICATION

Improvements in and Appertaining to Coal Tongs and the like

I, ALFRED ROGER GROSSMITH, a British subject, of 9, Waverley Road, Gloucester, in the County of Gloucester, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention relates to coal and like tongs of the kind comprising a frame or support, gripping jaws pivotally mounted at one end of the support for movement transverse in relation thereto, a stationary hand grip member at the other end of said support, a movable hand grip member slidably mounted on the support in proximity to the fixed grip for movement in the direction of the longitudinal axis of the tool, and a member coupling the movable hand grip with the jaws.

A grip member has been proposed comprising an approximately rectangular open frame for the fixed part and a transverse bar slidable thereon for the movable part, the coupling member being attached to the said bar.

According to the present invention, the movable grip member comprises a transverse limb forming the grip proper, a transverse limb spaced from the grip limb and attached to the coupling member, and two side limbs connecting the transverse limbs. Thereby the fingers of the hand are more conveniently accommodated since the transverse grip limb is not obstructed by the coupling member or its means of attachment to the limb.

A further feature of the invention consists in an improved construction of the tubular frame or support.

Reference may be had to the accompanying drawings in which Figure 1 is a front elevation and Figure 2 a side elevation of a tool according to the invention.

In the drawing, the improved tool includes two relatively slidable parts or groups of parts one of which embraces a hand grip 3, jaws 2, and a mechanical connection 8 between the hand grip and the jaws; while the other comprises a second hand grip 1 and a mounting or support 4 for the elements of the first mentioned group.

Though the rectilinear motion of the two hand grips is relative, it will be convenient to consider the grip which is

mechanically connected to the jaws as the movable one, and the other one as stationary. Any convenient construction of mounting may be adopted, and in one such as illustrated, is consists of a tube having at one end the hand grip 1 and at the other a bifurcation 5 adapted to carry two fulcrum pins 6 for the jaw members 7. The intermediate part of the tube forms an enclosure and/or guide for a tension rod 8 which couples the slidable grip to the jaws and also functions as a housing for accommodating a coiled spring 9 of the compression type.

The tubular mounting may be fabricated from a length of tube or from a blank of sheet metal processed to the preferred shape or configuration now to be described. At the jaw end, the metal is developed into a pair of limbs 10 of **U** cross-section in the terminal ends of which are secured as by rivetting the two fulcrum pins 6. At the grip end, the metal is shaped into two tubes 11 which diverge like a **Y**, either to receive a wire grip member as depicted or be continued as such member. Beyond the fork, the grip member may be of square or rectangular shape with rounded corners.

The movable grip 3 lies in the same plane as the stationary grip 1 and may consist also of wire bent to shape with a transverse limb 12 forming the grip proper, two side limbs 13 slidably mounted in or on the corresponding limbs 14 of the stationary grip, and two converging limbs 15 attached at the apex to one end of the coupling rod 8. The other end of the rod emerges from the housing for actuating the jaw members which preferably though not necessarily are arranged to function as levers of the first order.

In the preferred grab mechanism, the inner ends of the jaw members 7 are mutually and hingedly connected by a pivot pin 16 to an eye at the lower end of the coupling rod, and the fulcrum connection intermediate the ends of each lever is slotted, the slots 17 being inclined to the axis of the coupling rod at an obtuse angle when the jaws are open and at an acute angle when they are closed. The jaw members 7 may each be composed of a pair of sheet metal parts of **L** section butted together for hinge connection as aforesaid, and rivetted or otherwise to a curved plate 18 toothed at the outer edge 19.

In use, some or all of the fingers are inserted in the movable grip 3, and the palm brought to bear on the upper side of the stationary grip 1, the two parallel bars in contact with the hand being spaced a convenient distance apart. In this position, the coiled spring 9 holds the jaw members open and the movable grip member at its maximum distance from the stationary grip, and the tool will generally hang downwards from the hand. By a closing movement of the hand, the movable grip and attached rod are drawn towards the other grip in a sliding action which is converted into a closing action of the jaws by virtue of the pivotal connections. The slots 17 permit the jaw members to execute a combined sliding and turning motion in the same plane as that in which the pure sliding movement of the movable grip occurs; lateral support is afforded to the jaw members by the two limbs of the bifurcation in which each is mounted. A small movement of the grip say of one inch is sufficient to move the jaws from fully open position to closed position, and it is convenient to leave a spacing of a little more than said dimension between the two grips when the jaws are closed. Release of hand pressure allows the return spring to restore the several parts to their initial positions.

In a modification extended jaws with rubber fingers may be incorporated to enable the appliance to be employed for reaching articles in shop windows.

For greater comfort, the movable grip may be of sinuous formation to provide recesses to accommodate the fingers.

The free ends of the jaws preferably have straight line boundaries at right angles to the axis of the rod 8 whereby the tool can be stood upright on said edges on the floor, or suspended by a grip.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is:—

1. Tongs of the kind described in which the movable grip member comprises a transverse limb forming the grip proper, a transverse limb spaced from the grip limb and attached to the coupling member, and two sides limbs connecting the transverse limbs.

2. Tongs according to claim 1 having a tubular frame or support developed at one end to form a pair of diverging limbs adapted to receive the fixed grip member or continued to constitute said member.

3. Tongs according to claim 2 wherein the tubular frame or suppport is developed at the other end into a pair of limbs of **U** cross-section adapted to carry the fulcrum pins of the jaws.

4. Tongs according to any of the preceding claims embodying jaw members each composed of a pair of sheet metal parts of **L** section butted together, and a plate secured thereto.

5. Improved coal and like tongs substantially as herein described.

Dated this 28th day of April, 1941.
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Patent Agent and Chartered Engineer.

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